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**Zichettello et al.**

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(54) **PANORAMIC SUNROOF ASSEMBLY**

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***B60J 7/00*** (2006.01)
***B60J 7/057*** (2006.01)

(52) **U.S. Cl.**
CPC ..... ***B60J 7/0435*** (2013.01); ***B60J 7/003*** (2013.01); ***B60J 7/0084*** (2013.01); ***B60J 7/0573*** (2013.01)

(58) **Field of Classification Search**
CPC ..... B60J 7/0084; B60J 7/0007; B60J 7/0015; B60J 7/003; B60J 7/057; B60J 7/0573; B60J 7/0038
USPC ..... 296/216.01–224, 213, 214
See application file for complete search history.

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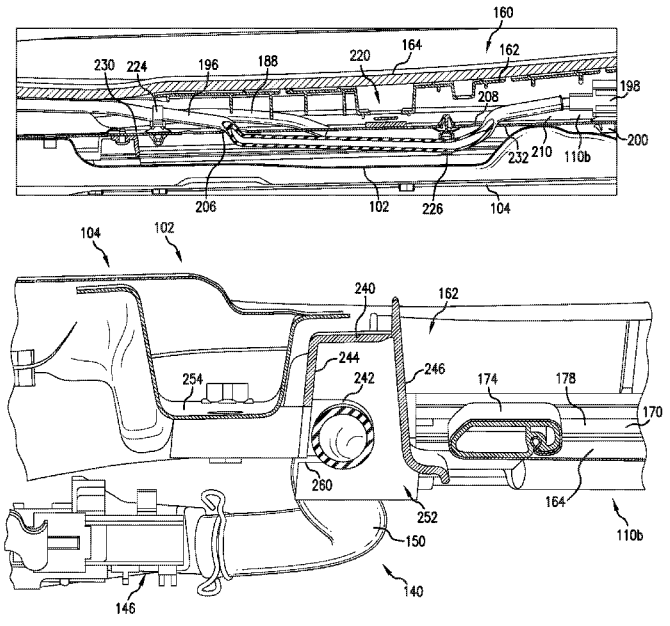
(57) **ABSTRACT**

A panoramic sunroof assembly includes a roof structure having a pair of side rails fixed thereto. A first sunroof panel covers a first opening of the roof structure, and a second sunroof panel covers a second opening of the roof structure. A sunshade assembly includes a frame mounted to the roof structure and a slidable sunshade panel for blocking light entering the second opening. The frame is configured to retain a drain tube of a drainage assembly thereto to prevent damage to the drain tube during install of the sunshade assembly on the roof structure and enable optimal daylight open size and position of the second opening. One of the side rails is configured to route a motor drive cord of a sunshade panel drive mechanism both above and below the one side rail at a predetermined location on the one side rail.

**17 Claims, 6 Drawing Sheets**



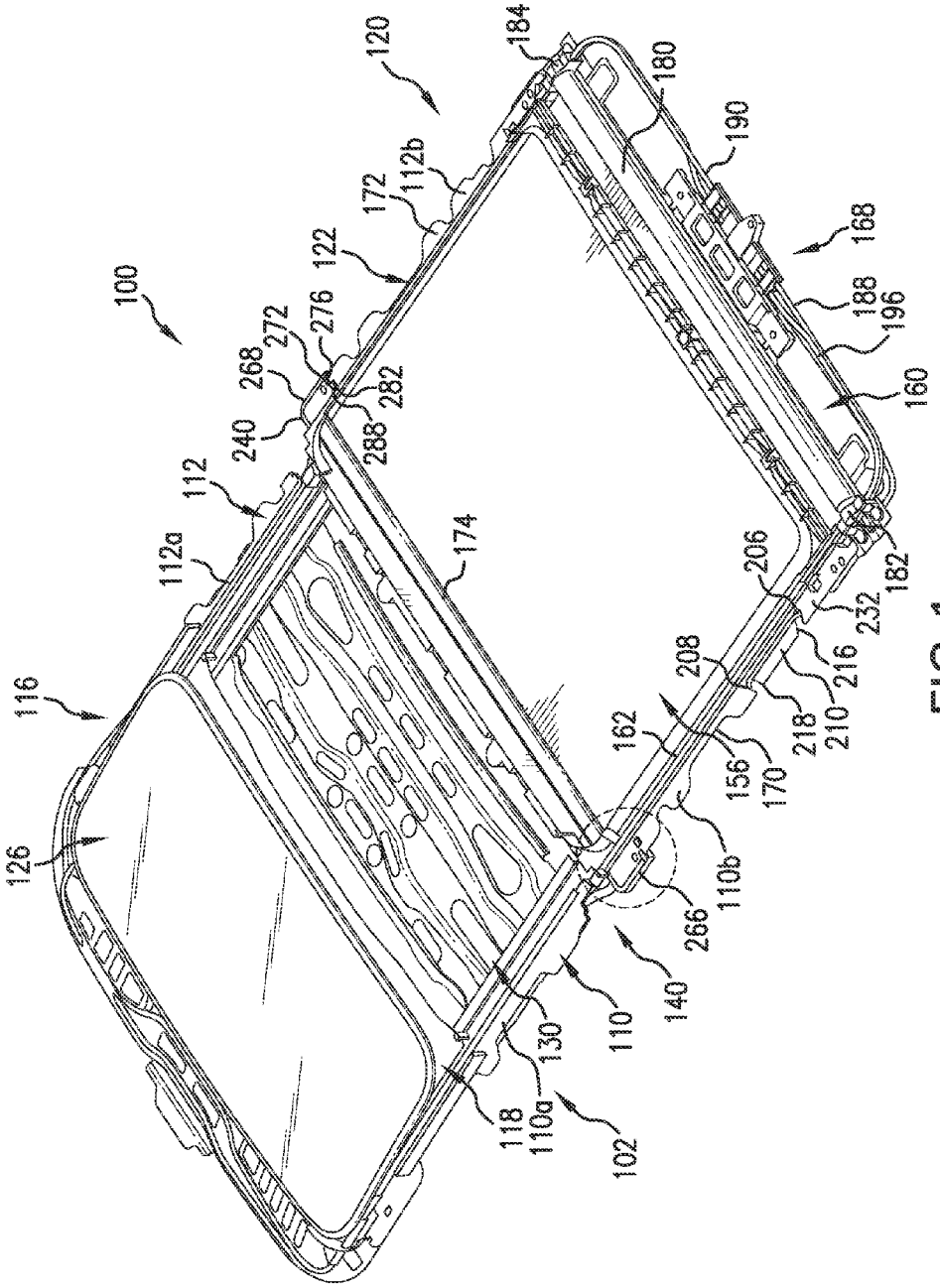

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FIG. 1

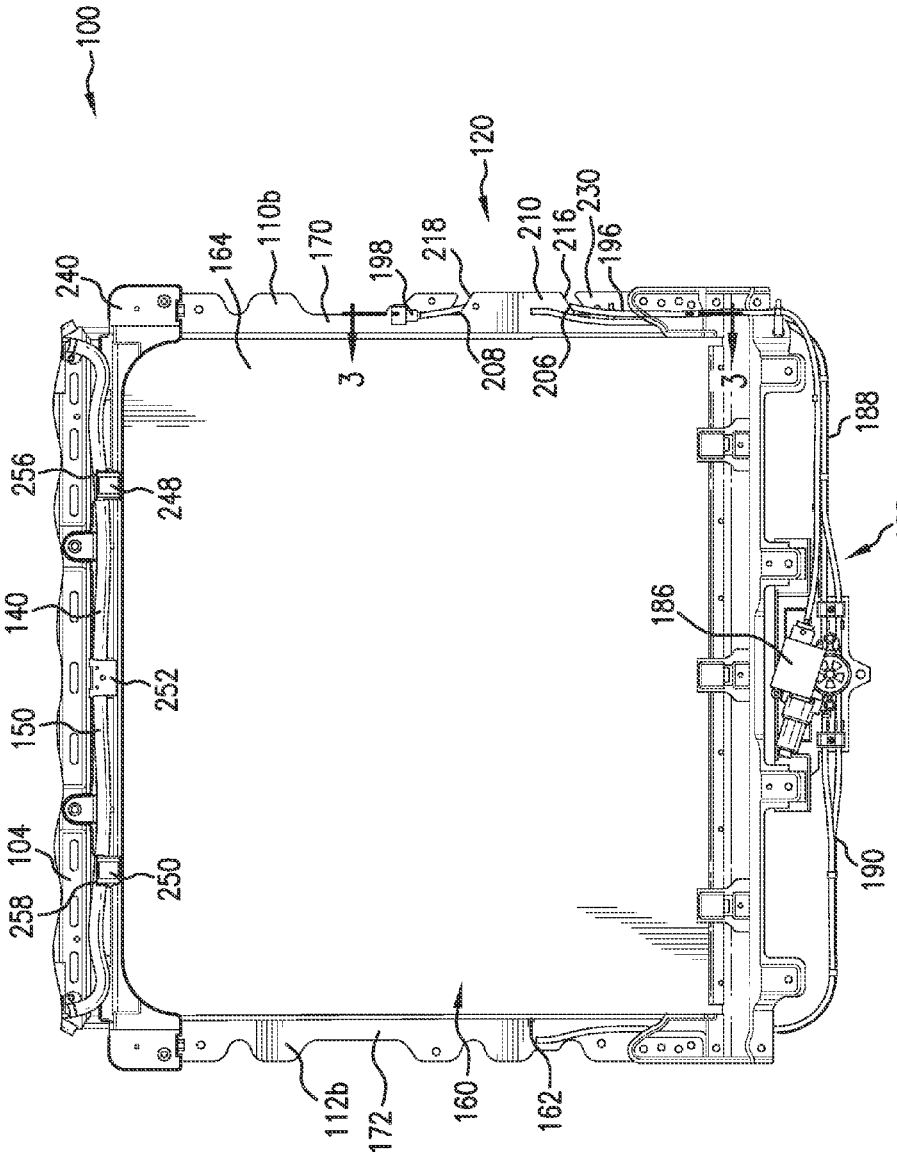
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FIG. 2

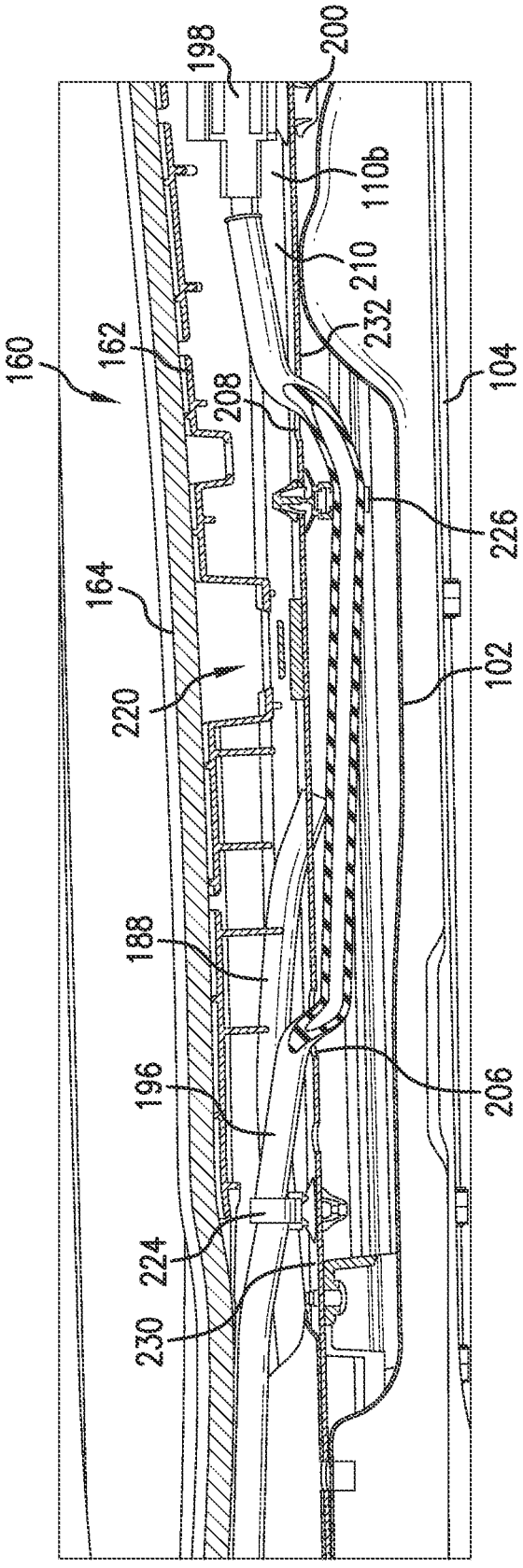
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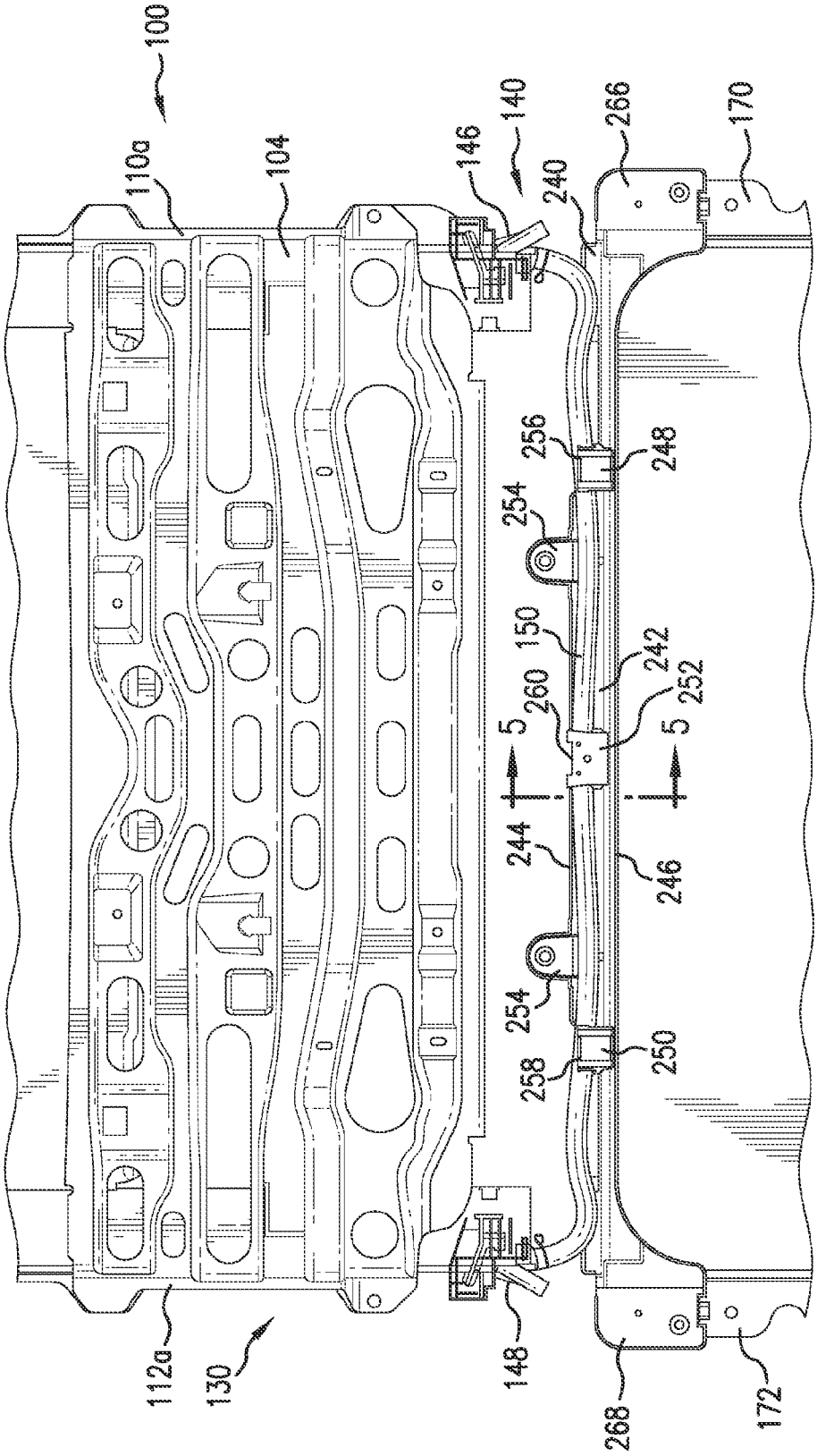
FIG. 3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112a
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FIG. 4

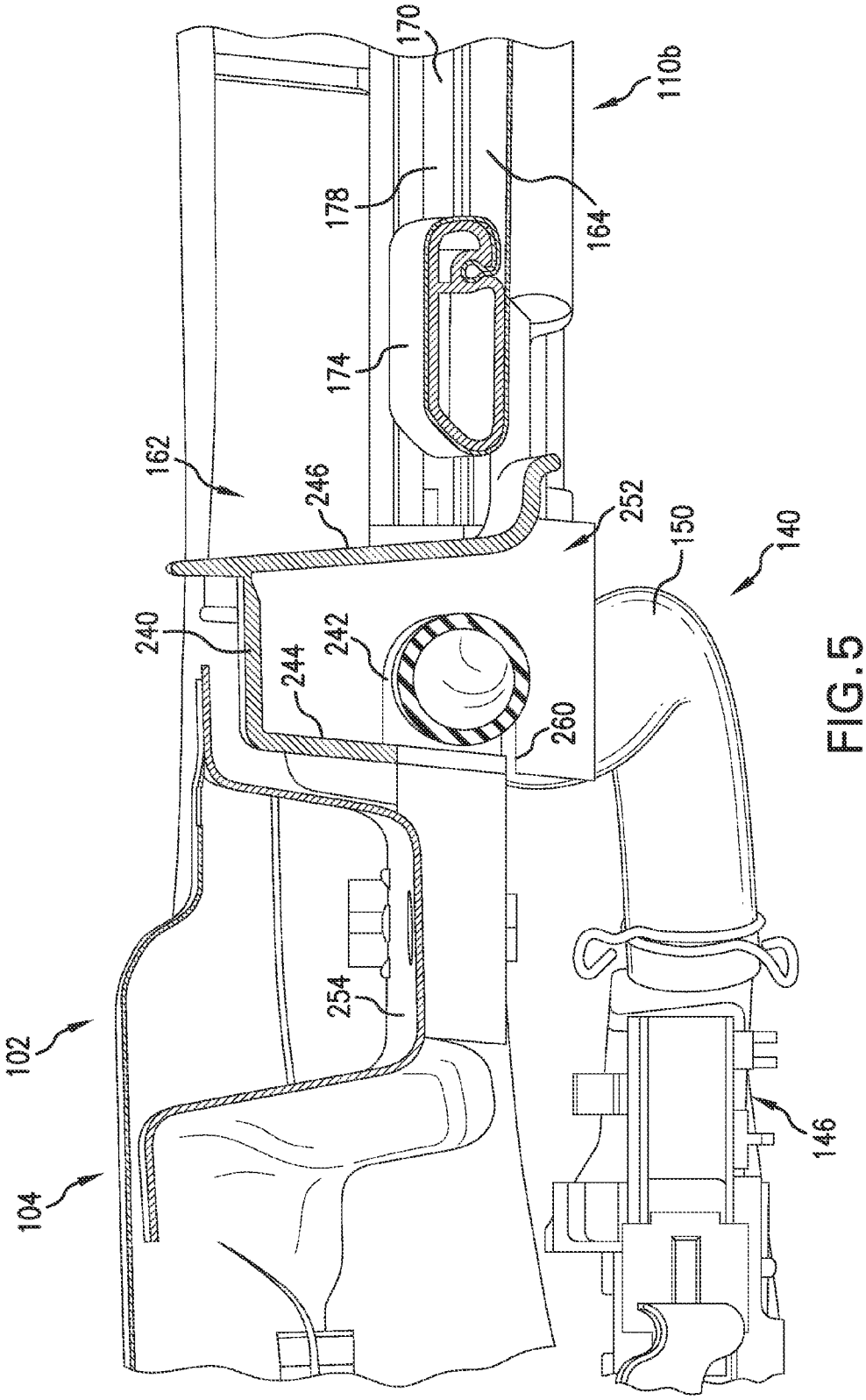
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FIG. 5

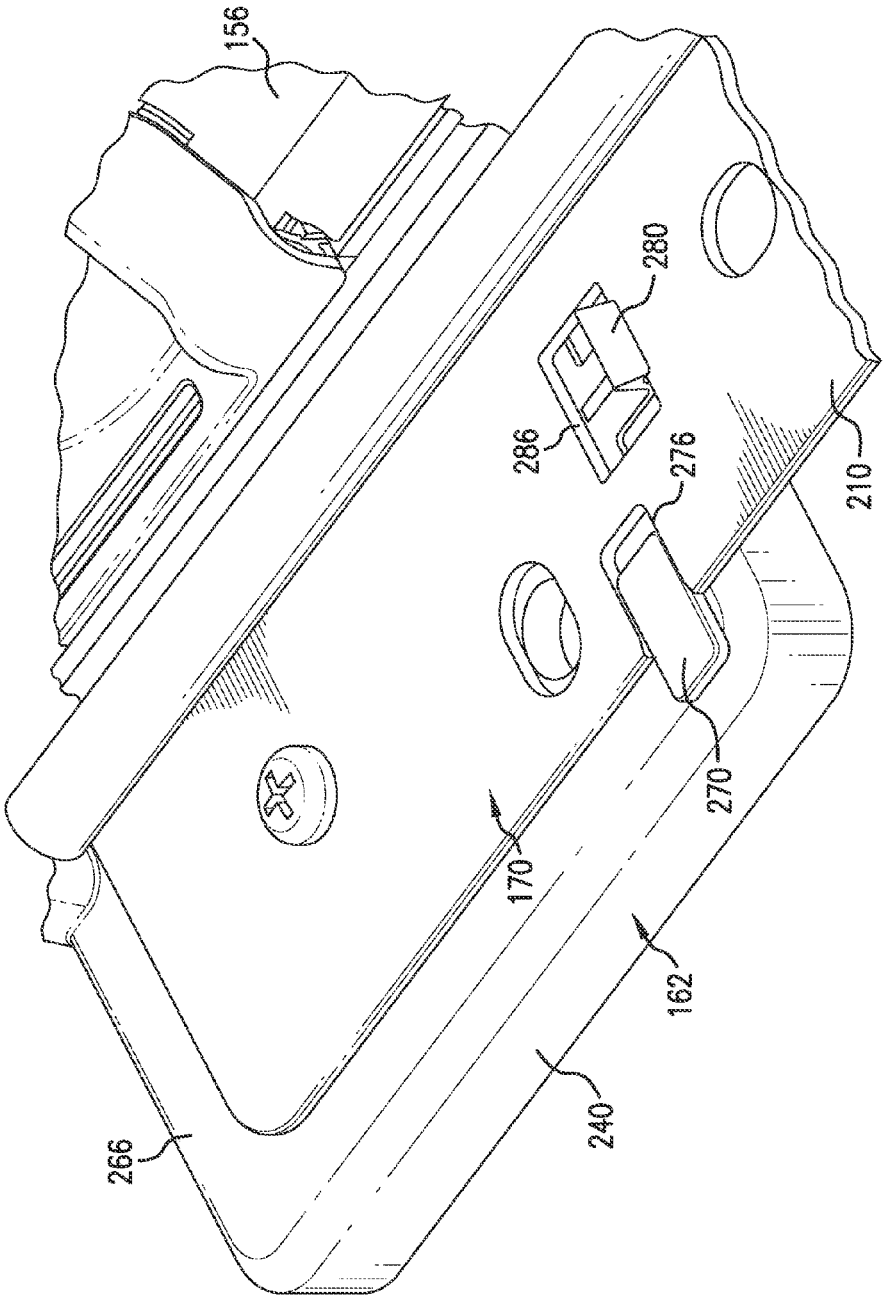


FIG.6

# PANORAMIC SUNROOF ASSEMBLY

## BACKGROUND

Vehicles typically include a panoramic sunroof assembly which offers an open feeling to the vehicle occupants by providing a glass sunroof panel along most of the roof panel including the front seat portion as well as the rear seat portion. To protect from sunlight shining through the sunroof panel, the panoramic sunroof assembly is traditionally provided with a sunshade assembly including a sunshade panel to selectively cover or uncover the sunroof panel. The sunshade panel is typically held on both sides in the vehicle interior and is displaceable in the vehicle longitudinal direction by winding or unwinding a roller that is disposed at an end of the roof panel. Rain gutters can also be provided along the sides of the sunroof panel. The gutters receive rainwater or washing water coming from between the peripheral edge of a sunroof opening and the sunroof panel and guide the water to drain conduits. The panoramic sunroof assembly can further include separate operating devices for moving the sunroof panel and the sunshade panel. Accordingly, the layout for the various components of the panoramic sunroof assembly can be complicated.

## BRIEF DESCRIPTION

In accordance with one aspect, a panoramic sunroof assembly for a vehicle comprises a roof structure including a pair of laterally spaced side rails fixed to the roof structure. The roof structure has a forward part defining a first opening and a rearward part defining a second opening. A first sunroof panel is slidably connected to the roof structure for covering the first opening, and a second sunroof panel is connected to the roof structure for covering the second opening. A sunshade assembly includes a frame separate from and mounted to the roof structure and a sunshade panel slidably connected to the frame for selectively blocking light entering the second opening. A drainage assembly is associated with the first opening. The drainage assembly includes a pair of laterally spaced drain conduits connected to the side rails and a drain tube interconnecting the drain conduits. The frame of the sunshade assembly is configured to retain the drain tube thereto to prevent damage to the drain tube during install of the sunshade assembly on the roof structure and enable optimal daylight open size and position of the second opening.

In accordance with another aspect, a panoramic sunroof assembly for a vehicle comprises a roof structure including a pair of laterally spaced side rails fixed to the roof structure. The roof structure has a forward part defining a first opening and a rearward part defining a second opening. A first sunroof panel is slidably connected to the roof structure for covering the first opening, and a second sunroof panel is connected to the roof structure for covering the second opening. A sunshade assembly includes a frame mounted to the roof structure. A sunshade panel is slidably connected to the frame for selectively blocking light entering the second opening. A drive mechanism moves the sunshade panel between a closed position and an opened position. The drive mechanism includes a motor drive cord extending along one of the side rails. The one side rail includes a pair of longitudinally spaced slots angled toward one another and sized to receive and retain therein the motor drive cord. The slots allow the motor drive cord to be routed both above and below the one side rail at a predetermined location on the one side rail.

In accordance with yet another aspect, a panoramic sunroof assembly for a vehicle comprises a roof structure including a pair of laterally spaced side rails fixed to the roof structure. The roof structure has a forward part defining a first opening and a rearward part defining a second opening. A first sunroof panel is slidably connected to the roof structure for covering the first opening, and a second sunroof panel is connected to the roof structure for covering the second opening. A sunshade assembly includes a frame mounted to the roof structure. A sunshade panel is slidably connected to the frame for selectively blocking light entering the second opening. The frame includes a front frame part configured to at least partially secure thereto a drain tube of a drainage assembly associated with the first opening. A drive mechanism moves the sunshade panel between a closed position and an opened position. The drive mechanism includes a motor drive cord extending along one of the side rails. The one side rail is configured to route the motor drive cord both above and below the one side rail at a predetermined location on the one side rail.



## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a top perspective view of a panoramic roof assembly.

FIG. **2** is a bottom perspective view of a rear part of the panoramic sunroof assembly of FIG. **1**.

FIG. **3** is a cross-sectional view taken along line **3-3** of FIG. **2**.

FIG. **4** is a bottom perspective view of a central part of the panoramic sunroof assembly of FIG. **1**.

FIG. **5** is a cross-sectional view taken along line **5-5** of FIG. **4**.

FIG. **6** is an enlarged view of the circled portion of FIG. **1**.

## DETAILED DESCRIPTION

It should, of course, be understood that the description and drawings herein are merely illustrative and that various modifications and changes can be made in the structures disclosed without departing from the present disclosure. In general, the figures of the exemplary panoramic sunroof assembly are not to scale. As used herein, lateral directions are transverse across the vehicle, i.e., left and right directions. Likewise, longitudinal directions refer to forward and rearward directions of vehicle travel, and the vertical directions relate to elevation, i.e., upward and downward directions. It will also be appreciated that the various identified components of the exemplary panoramic sunroof assembly disclosed herein are merely terms of art that may vary from one manufacturer to another and should not be deemed to limit the present disclosure.

Referring now to the drawings, wherein like numerals refer to like parts throughout the several views, FIGS. **1-6** illustrate a panoramic sunroof assembly **100** according to the present disclosure. The exemplary panoramic sunroof assembly **100** comprises a roof structure **102** overlying a roof panel **104** (FIG. **2**) for covering an opening of a fixed roof of a vehicle (not shown). A pair of laterally spaced, longitudinally extending side rails **110**, **112** is fixed to the roof structure **102**. The roof structure **102** has a forward part **116** defining a first opening **118** through the roof structure and a rearward part **120** defining a second opening **122** through the roof structure. In the depicted embodiment, a first sunroof panel **126** is connected to the roof structure **102** for covering the first opening **118**. As is well known, the first sunroof panel **126** can be movable from a closed position shown in FIG. **1** to an opened position where the first sunroof panel **126** is slid by a tilt-and-slide mechanism (to be generally described below)

rearward over a section **130** of the roof structure **102** located between the first and second openings **118**, **122**.

As depicted in FIG. **1**, the side rails **110**, **112**, which can be laterally symmetrical, extend the length of the roof structure **102** and flank the first and second openings **118**, **122**. According to one aspect, each side rail **110**, **112** can be defined by separate forward and rear side rail sections, the side rail **110** including a forward side rail section **110***a* and a rear side rail section **110***b* and the side rail **112** including a forward side rail section **112***a* and a rear side rail section **112***b*. It should be appreciated that the side rails **110**, **112** can also provide structural support for the roof structure **102** along the first and second openings **118**, **122**. The forward side rail sections **110***a*, **112***b* of each of the respective side rails **110**, **112** can include a guide rail groove (not shown) for accommodating at least one slider (not shown) of the tilt-and-slide mechanism which is operably connected to the first sunroof panel **126**. As is well known, the at least one slider can include a front slider and a rear slider that slide in the longitudinal direction of the vehicle in the guide rail groove provided in the each side rail **110**, **112**. In FIG. **1**, the first sunroof panel **126** is fully closed, and the at least one slider of each side rail **110**, **112** is at a foremost position. From this state, rearward sliding movement of the at least one slider of each side rail **110**, **112** causes the first sunroof panel **126** to move to the opened position overlapping the section **130** of the roof structure **102**, which leaves the first opening **118** of the roof structure opened. It should be appreciated, however, that the first sunroof panel **126** can be fixed in the first opening **118**.

A drainage assembly **140** is associated with the first opening **118** for receiving rainwater or washing water coming from between a peripheral edge of the first opening **118** and the first sunroof panel **126** and guiding the water away from the first opening **118**. To direct water away from the first opening **118**, a gutter (not shown) can be provided in a portion of the roof structure **102** which frames the first opening **118**. The gutter can have a generally rectangular shape as a whole and can comprise a front side gutter portion, a left side gutter portion, a right side gutter, and a rear side gutter portion. Each of the front side gutter and the rear side gutter can have a central portion slightly raised relative to its opposite ends so that water is reliably guided from the front and rear side gutter portions to the left and right side gutter portions. Drain conduits are connected to the gutter (only a pair of rear laterally spaced drain conduits **146**, **148** connected to the forward side rail sections **110***a*, **112***a* of the respective side rails **110**, **112** is visible in FIG. **4**). The drain conduits are in communication with drain openings located on a lower part of the vehicle body (not shown) via hollow portions provided in front pillars (not shown) and center pillars (not shown) of the vehicle body, and the water guided into the drain conduits is discharged out of the body from the drain openings. The drainage assembly **140** further includes a connecting conduit or drain tube **150** arranged as a connecting passage for connecting the rear drain conduits **146**, **148**. If a large quantity of rainwater is coming into the gutter when the vehicle is parked, for example, the water in either the left side gutter portion or the right side gutter portion can be fed through the drain tube **150** to the other of the left side gutter portion and right side gutter portion to be guided to its adjacent drain conduit **146**, **148**. Thus, the use of the drain tube **150** prevents water from overflowing from the left and right side gutter portions of the drainage assembly **140**.

The panoramic sunroof assembly **100** further comprises a second sunroof panel **156** connected to the roof structure **102** for covering the second opening **122**. In the depicted embodiment, the second sunroof panel **156** is defined by a large window which can be fixed (i.e., non movable) relative to the second opening **122**. A sunshade assembly **160** is operably associated with the second sunroof panel **156**. The sunshade assembly **160** generally includes a frame **162** separate from and mounted to the roof structure **102** and a sunshade panel **164** disposed under the second sunroof panel **156**. When the sunshade panel **164** is closed, it covers the second opening **122** of the roof structure **102** to block light entering the second opening **122**, and when it is opened, it is moved horizontally and rearward, and is accommodated in the roof structure **102**. A drive mechanism **168** can be provided to move the sunshade panel **164** between its closed position and its opened position. It should be noted that the sunshade panel can be configured to be manually operated from an interior side.

The frame **162** of the sunshade assembly **160** is provided with sunshade rails **170**, **172** extending in the longitudinal direction of the vehicle which guide opening/closing of the sunshade panel **164**. Each of the sunshade rails **170**, **172** is disposed inward in a vehicle-width direction relative to the rear side rail sections **110***b*, **112***b* of the respective side rails **110**, **112** as shown in FIG. **1**, and can be symmetrical in a lateral direction. Further, it should be appreciated that the sunshade rails **170**, **172** can be defined by the rear side rail sections **110***b*, **112***b* of the respective side rails **110**, **112**. As best depicted in FIGS. **1** and **5**, the sunshade panel **164** is tensioned at its opposite sides by a guide strip **174**. Opposite ends of the guide strip **174** are secured in channels or rail grooves (only groove **178** of sunshade rail **172** is shown) located in the sunshade rails **170**, **172**. It should be appreciated that the ends of the guide strip **174** can be mounted to sliders (not shown), and when both sliders slide along their respective sunshade rails **170**, **172** in the longitudinal direction, the sunshade panel **164** is slid between the closed and opened positions. As illustrated in FIG. **1**, the sunshade panel **164** is wound onto a winding reel **180** of the drive mechanism **168** mounted to the frame **162**. The winding reel **180** includes a pair of rollers **182**, **184** mechanically connected to a motor **186** of the drive mechanism **168** that assists in movement of the sunshade panel **164** between the closed and opened positions. With reference to FIGS. **2** and **3**, cables **188**, **190** associated with the rollers **182**, **184** are connected to the opposite ends of the guide strip **174**. By performing synchronous push-pull operation of the cables **188**, **190** via the rollers of the winding wheel **180**, the sunshade panel **164** opens and closes to selectively block light entering the second opening **122**.

As illustrated in FIGS. **2** and **3**, the drive mechanism **168** further includes a motor drive cord **196** having one end connected to the motor **186** and an opposite end connected to a harness **198** mounted to one of the side rails **110**, **112**. The motor drive cord **196** extends along the one side rail **110**, **112**, and the one side rail is configured to route the motor drive cord **196** both above and below the one side rail at a predetermined location on the one side rail. Particularly, the motor drive cord **196** extends along the rear side rail section **110***b* of the side rail **110** and the harness **198** is connected thereto via a fastener **200**, which can be any type of mechanical fastening device commonly known in the art. A pair of longitudinally spaced slots **206**, **208** extends through a mounting flange **210** of the rear side rail section **110***b* of the side rail **110**, and each of the slots **206**, **208** is sized to receive and retain therein the motor drive cord **196**. According to one aspect, the pair of slots **206**, **208** are angled or canted on the mounting flange **210** such that an open end **216**, **218** of each respective slot **206**, **208** extends toward one another. The pair of slots **206**, **208** provided in the rear side rail section **110***b* of the side rail **110** allows the motor drive cord **196** to avoid crowded layout areas of the roof structure **102**. By way of example, FIG. **3**

depicts the motor drive cord **196** routed around an attachment point **220** between the roof structure **102** and the rear side rail section **110***b* of the side rail **110**. The pair of slots **206**, **208** also provides an attachment feature thereby eliminating the need for additional fasteners for mounting the motor drive cord **192** to the side rail **110**. As shown, by use of the slots **206**, **208**, only a pair of fasteners **224**, **226** is required to securely mount the motor drive cord **196** to the mounting flange **210**. The first fastener **224** is located rearward of the slot **206** for securing the motor drive cord **196** to a first surface **230** of the mounting flange **210** and the second fastener **226** is located rearward of the slot **208** for securing the motor drive cord **196** to a second opposite surface **232** of the mounting flange **210**. Further, it should be appreciated that the angle of each of the slots **206**, **208** forces the motor drive cord **196** to stay in location on the mounting flange **210**.

As depicted in to FIGS. **4** and **5**, the frame **162** of the sunshade assembly **160** is configured to retain the drain tube **150** thereto to prevent damage to the drain tube **150** during install of the sunshade assembly **160** on the roof structure **102** due to the close proximity of the sunshade assembly **160** to the first sunroof panel **126**, and to enable optimal daylight open size and position of the second opening **122**. Particularly, the frame **162** includes a front frame part **240** which extends laterally between the rear side rail sections **110***b*, **112***b* of the side rails **110**, **112**. The front frame part **240** defines a channel **242** dimensioned to at least partially receive the drain tube **150**. According to one aspect, the channel **242** of the front frame part **240** is defined by a pair of longitudinally spaced walls **244**, **246** dimensioned to receive and retain the drain tube **150** within the channel **242**. Further, the front frame part **240** includes a pair of laterally spaced first attachment members **248**, **250** and a second attachment member **252**, each attachment member configured to engage the drain tube **150** once positioned in the channel **242**. As shown, the second attachment member **252** is centrally located on the front frame part **240**. Each of the first attachment members **248**, **250** and the second attachment member **252** can be generally C-shaped in cross-section having a respective open end portion **256**, **258**, **260** adapted to receive and retain the drain tube **150**. The first and second attachment members **248**, **250**, **252** can be integrally formed with the front frame part **240**; although, this is not required. The frame **162** of the sunshade assembly **160** further includes at least one front mount **254** extending from the front frame part **240** for connecting the frame **162** to the roof structure **102**. As shown in FIG. **5**, the drain tube **150** is secured to the front frame part **240** rearward of and at least partially below the at least one front mount **254**.

With reference back to FIG. **1**, the front frame part **240** the sunshade assembly frame **162** includes end portions **266**, **268** connected to the respective rear side rail sections **110***b*, **112***b* of the side rails **110**, **112**, and the connection between the front frame part **240** and each side rail **110**, **112** is configured to prevent longitudinal movement of the front frame part **240** relative to the side rails but allow lateral adjustment of the front frame part **240** relative to the side rails. According to the depicted embodiment, to allow for this lateral adjustment of the front frame part **240**, located on the respective end portions **266**, **268** of the front frame part are projections **270**, **272**. Each of the respective side rails **110**, **112** includes a laterally extending cutout **276**, **278**. Cutout **276** is sized to slidably receive (in the lateral direction) the projection **270** and cutout **278** is sized to slidably receive (in the lateral direction) the projection **272**. FIG. **6** depicts the end portion **266** of the front frame part **240** connected to the side rail **110**. According to one aspect, each of the projection **270** and cutout **276** is generally rectangular shaped; although, alternative shapes are contemplated. The cutout **276** has a longitudinal dimension slightly greater than a longitudinal dimension of the projection **270** which allows for lateral movement, but also prevents longitudinal movement, of the projection **270** within the cutout **276**. This engagement between the projections **270**, **272** and the cutouts **276**, **278** ensures a perpendicular arrangement between the side rails **110**, **112** and the frame **162** while allowing adjustability in the lateral direction. It should be appreciated that the projection/cutout arrangement is by way of example only and that alternative manners to laterally adjust the sunshade assembly frame **162** relative to the side rails **110**, **112** are contemplated. For example, the front frame part **240** can be provided with a fastener which is received in a slotted hole located in one of the side rails **110**, **112**.

The front frame part **240** further includes a pair of mounting tabs **280**, **282** located inwardly of the respective projections **270**, **272** for engaging the side rails **110**, **112**. In the depicted embodiment, each of the side rails **110**, **112** includes a respective second cutout **286**, **288** for receiving one of the mounting tabs **280**, **282**. Each second cutout is also dimensioned to allow lateral movement of the mounting tab received therein. By way of example, FIG. **6** depicts the mounting tab **280** received in the second cutout **286**. The second cutout **286** has predetermined lateral dimension which allows the mounting tab **280** to laterally move within the second cutout **286** without inhibiting the lateral movement of the projection **270** within the cutout **276**.

As is evident from the foregoing, the present disclosure generally relates to a panoramic sunroof assembly **100** including a sunshade assembly **160** mounted to a roof structure **102**. The sunshade assembly **160** includes a sunshade panel **164** mounted to the roof structure **102** underneath a panoramic second sunroof panel **156**. The sunshade panel **164** is tensioned at its opposite sides by a guide strip **174** which is trapped in rail grooves located in sunshade rails **170**, **172**. The sunshade rails **170**, **172** can be defined in rear side rails sections **110***b*, **112***b* of the respective side rails **110**, **112**. Slots **206**, **208** are also formed in a mounting flange **210** of one of the side rails **110**, **112** to allow routing of a sunshade motor drive cord **196** above and below the one side rail. The angle of each slot **206**, **208** forces the motor drive cord **196** to stay in location which eliminates the need for additional mounting fasteners. A front frame part **240** of a sunshade assembly frame **162** is configured to integrate a drain tube **150** of a drainage assembly **140** to prevent damage to the drain tube upon installation of the sunshade assembly **160** due to the close proximity of the sunshade assembly **160** to a first sunroof panel **126**. Finally, each of the side rails **110**, **112** can be provided with a cutout **276**, **278** for receiving a respective projection **270**, **272** provided on the front frame part **240** that permits sideways adjustability of the front frame part, for making each side rail **110**, **112** perpendicular to the front frame part **240**, and for adjusting sideway or lateral tension of the sunshade panel **164**.

It will be appreciated that various of the above-disclosed and other features and functions, or alternatives thereof, may be desirably combined into many other different systems or applications. Also that various presently unforeseen or unanticipated alternatives, modifications, variations or improvements therein may be subsequently made by those skilled in the art which are also intended to be encompassed by the following claims.

What is claimed is:

**1**. A panoramic sunroof assembly for a vehicle comprising:

a roof structure including a pair of laterally spaced side rails fixed to the roof structure, the roof structure having

a forward part defining a first opening and a rearward part defining a second opening;

a first sunroof panel slidably connected to the roof structure for covering the first opening;

a second sunroof panel fixedly connected to the roof structure for covering the second opening;

a sunshade assembly including a frame separate from and mounted to the roof structure and a sunshade panel slidably connected to the frame for selectively blocking light entering the second opening; and

a drainage assembly associated with the first opening, the drainage assembly including a pair of laterally spaced drain conduits connected to the side rails and a drain tube interconnecting the drain conduits, wherein the frame of the sunshade assembly is includes a front frame part located forward of the second opening and configured to retain the drain tube thereto to prevent damage to the drain tube during install of the sunshade assembly on the roof structure.

**2**. The assembly of claim **1**, wherein the front frame part defines a channel dimensioned to at least partially receive the drain tube.

**3**. The assembly of claim **2**, wherein the front frame part includes a pair of laterally spaced first attachment members configured to engage the drain tube and retain the drain tube in the channel of the front frame part.

**4**. The assembly of claim **3**, wherein the front frame part includes a second attachment member configured to engage the drain tube, the second attachment member being centrally located on the front frame part.

**5**. The assembly of claim **1**, wherein the frame includes a front mount for connecting the frame to the roof structure, the drain tube being secured to the frame rearward of and at least partially below the front mount.

**6**. The assembly of claim **1**, wherein the sunshade assembly further includes a drive mechanism for moving the sunshade panel between a closed position and an opened position, the drive mechanism including a motor drive cord extending along one of the side rails, the one side rail being configured to route the motor drive cord both above and below the one side rail at a predetermined location on the one side rail.

**7**. The assembly of claim **6**, wherein the one side rail includes a pair of longitudinally spaced slots sized to receive and retain therein the motor drive cord.

**8**. The assembly of claim **7**, wherein the pair of slots is angled toward one another.

**9**. The assembly of claim **7**, wherein the pair of slots is located on a mounting flange of the one side rail.

**10**. The assembly of claim **7**, wherein the pair of slots routes the motor drive cord around an attachment point between the one side rail and the roof structure.

**11**. A panoramic sunroof assembly for a vehicle comprising:

a roof structure including a pair of laterally spaced side rails fixed to the roof structure, the roof structure having a forward part defining a first opening and a rearward part defining a second opening;

a first sunroof panel slidably connected to the side rails of the roof structure for covering the first opening;

a second sunroof panel connected to the roof structure for covering the second opening; and

a sunshade assembly including a frame mounted to the roof structure, a sunshade panel slidably connected to the frame for selectively blocking light entering the second opening, and a drive mechanism for moving the sunshade panel between a closed position and an opened position, the drive mechanism including a motor drive cord extending along one of the side rails, the one side rail including a pair of longitudinally spaced slots sized to receive and retain therein the motor drive cord, the slots allowing the motor drive cord to be routed both above and below the one side rail at a predetermined location on the one side rail, wherein the pair of slots routes the motor drive cord around an attachment point between the one side rail and the roof structure.

**12**. The assembly of claim **11**, wherein the pair of slots is angled toward one another.

**13**. The assembly of claim **11**, further including a drainage assembly associated with the first opening, the drainage assembly including a pair of laterally spaced drain conduits connected to the side rails and a drain tube interconnecting the drain conduits, the drain tube being secured to a front frame part of the sunshade assembly frame.

**14**. The assembly of claim **13**, wherein the front frame part defines a channel dimensioned to at least partially receive the drain tube, the front frame part including laterally spaced attachment members configured to engage the drain tube and retain the drain tube in the channel of the front frame part.

**15**. A panoramic sunroof assembly for a vehicle comprising:

a roof structure including a pair of laterally spaced side rails fixed to the roof structure, the roof structure having a forward part defining a first opening and a rearward part defining a second opening;

a first sunroof panel slidably connected to the roof structure for covering the first opening;

a second sunroof panel connected to the roof structure for covering the second opening;

a sunshade assembly including a frame mounted to the roof structure and a sunshade panel slidably connected to the frame for selectively blocking light entering the second opening, the frame including a front frame part configured to at least partially secure thereto a drain tube of a drainage assembly associated with the first opening; and

a drive mechanism for moving the sunshade panel between a closed position and an opened position, the drive mechanism including a motor drive cord extending along one of the side rails, the one side rail being configured to route the motor drive cord both above and below the one side rail at an attachment point between the one side rail and the roof structure, wherein the one side rail includes a pair of longitudinally spaced slots angled toward one another and sized to receive and retain therein the motor drive cord.

**16**. The assembly of claim **15**, wherein the front frame part defines a channel dimensioned to at least partially receive the drain tube.

**17**. The assembly of claim **16**, wherein the front frame part includes laterally spaced attachment members configured to engage the drain tube and retain the drain tube in the channel of the front frame part.

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